FOK, V.A.

Notes on Albert Einstein's autobiography. Usp.fiz.nauk. 59 no.1:
107-118 My '56.   (MLRA 9:12)
            (Einstein, Albert, 1879-1955)

613.503
.P6

Raboty Po Kvantovoy Teorii Polya (Work in the Quantum Field Theory) Leningrad,
Izd-Vo Leningradskogo Universiteta, 1957.
157, (1) P.
At Head of Title: Leningrad, Universitet.
"Literatura": P. (158)

613.503   N/5

MEA

Fock, V, A,

CZECHOSLOVAKIA/Theoretical Physics - Theory of Relativity. Unified B-2
          Field Theory.

Abs Jour : Ref Zhur - Fizika, No 2, 1958, No 2645

Author   : Fock. V.A.
Inst   : Not Given
Title   : Homogeneity, Covariance, and Relativity

Orig Pub : Chekhosl. fiz. zh., 1957, 7, No 3, 255-261

Abstract : No abstract

Card   : 1/1

Fock V.A.

CZECHOSLOVAKIA/Theoretical Physics - Quantum Mechanics   B-4

Abs Jour : Ref Zhur - Fizika, No 9, 1958, No 19637

Author   : Fock V.A.
Inst   : Not Given
Title   : On the Interpretation of Quantum Mechanics.

Orig Pub : Chekhosl. fiz. zh., 1957, 7, No 6, 643-656

Abstract : See Abstract 19636

Card   : 1/1

uage on his paper (published in 1950). The theory of the ....
Of greatest interest for the author, were, however, the 6 or 7 talks
with Nils Bor (Niels Bohr).

ASSOCIATION   Not given
PRESENTED BY
SUBMITTED
AVAILABLE   Library of Congress
Card 1/1

FOK, V.   [A.]

"Three Lectures on Relativity Theory," Reviews of Modern Physics, 29, 325, 1957.

Summarizes three lectures which Fok gave in Copenhagen.

Evaluation - A-3,106,478, 9 June 1958.
  and   A-3, 104, 807, 19 May 1958

53-4-6/10

AUTHOR: Fok, V. A.

TITLE: On the Interpretation of Quantum Mechanics (Ob interpretatsii kvantovoy mekhaniki)*

PERIODICAL: Uspekhi Fiz.Nauk, 1957, Vol. 62, Nr 4, pp. 461-474 (USSR)

ABSTRACT: The present paper is arranged as follows: 1: The experiments of interpreting the wave functions classically and the causes of their failure. 2: The idea by Niels Bohr and his terminology: According to the author's opinion, Niels Bohr stresses the part played by the apparatus too much and underestimates the necessity of abstraction. Niels Bohr, in a manner of speaking, forgets that the properties of the micro object and not the properties of the apparatus have to be investigated. Next, the author deals with the supposed deficiences of Bohr's terminology. According to the statements made by the author, Bohr does not support the positivistic point of view and wants to neglect the term "uncontrollable interaction". Furthermore, according to Bohr, the general causality principle has to be distinguished from the determinism of the Laplace type, because only Laplace's determinism contradicts the law of atomic physics. 3: The rejection of new ideas as a reaction to their positivistic interpretation. The most extreme positivistic point of view is held by P. Jordan, serious physicians, according to the opinion of the author,

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On the Interpretation of Quantum Mechanics.   53-4-6/10

like M.Born, W.Heisenberg, disregard this point of view more and
more. The author then deals with the too narrow deterministic
point of view of the deterministical point of view. 4: Relativity
with respect to means of observation: Such a relativity, according
to the opinion of the author, by no means destroys objectivity.
The objects of the micro world are just as real and their proper-
ties just as objective as those studied by classical physics. 5:
The conception of the apparatus. 6: The nature of the dualism wave
-particle. According to the opinion of the author an atomic object
has the same potential possibilities to occur, according to ex-
terior conditions, either as a wave or as a particle or also as
an intermediate form. 7: The probability description of the inter-
action between object and device. 8: The probability characteri-
stic of the state of an object. 9: The conceptions of the potent-
ial possibilities and those realizable in classical physics.
1o: The probability and the statistics in quantum mechanics. 11:
The forms of the expression for the causality principle in quantum
mechanics. 12.The philosophical problems raised by quantum me-
chanics. There is 1 figure.

AVAILABLE: Library of Congress
              *This article is being published in English in the Czsl. Journal of
              Physics.(Ceskoslovensky Casopis Pro Fysiku) /Issue not given/
Card 2/2

F₀ K, V, A,

SOV/30-59-1-47/57

30(5):
AUTHOR: Chesnokov, Ye. M., Candidate of Philosophical Sciences

TITLE: Problems Concerning Philosophy of Modern Natural Science (Filosof-
               kiye voprosy sovremennogo yestestvoznaniya)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 1, pp 132-136 (USSR)

ABSTRACT: At the end of October, last year an All-Union conference took
               place which dealt with these problems. The conference had been
               sponsored by the Akademiya nauk (Academy of Sciences) and the
               Ministerstvo vysshego obrazovaniya SSSR (Ministry of Higher
               Education of the USSR). More than 600 well-known experts in
               the spheres of sciences and philosophy took part, among them
               academicians and Corresponding Members, Academy of Sciences,
               USSR, representatives of the Academies of the Union Republics
               and Branch Academies as well as scientists from scientific
               research institutes and universities. Scientific representa-
               tives from Bulgaria, Rumania, Germany, Hungary and Czecho-
               slovakia were guests. It was the aim of the conference to
               unite the creative powers of Soviet philosophers and scientists
               for the purpose of a dialectic-materialistic generalization
               of the achievements of modern science and for raising its level
               which is intended to contribute towards a solution of the most
               important scientific problems in as short a period as possible.
               Both were the ideas expressed by Academician L. A. Kosmynkov,
               President of the All USSR and K. V. Ostrovityanov, Chairman
               of the Committee for the Organization of the Conference on the
               occasion of their opening speeches.
               Further, the following reports were heard and discussed:
               M. B. Mitin, Academician, spoke about Lenin's materialism and
               empiriocriticism as the great ideological weapon for the
               perception and transformation of the world.
               M. E. Omelyanovskiy, Academician, of the AS UkrSSR, dealt in
               his report with V. I. Lenin and the philosophical problems of
               modern physics.
               B. M. Kedrov, Doctor of Philosophical Sciences, Corresponding
               Member, Academy of Pedagogical Sciences RSFSR, reported on the
               interrelation in nature of the forms of movement of matter.
               V. A. Fok spoke about the interpretation of quantum mechanics.
               A. D. Aleksandrov, Corresponding Member, Academy of Sciences,
               USSR, spoke about the philosophical meaning and the importance
               of the theory of relativity.
               S. L. Sobolev, Academician, and A. A. Lyapunov, Professor,

Card 1/4

               dealt with cybernetics and natural science.
               I. I. Schmalhausen, Academician, spoke about some methodical
               problems of cosmogony.
               V. A. Engelgardt, Academician, and O. M. Frank, Corresponding
               Member, AS USSR, reported on the role of physics and chemistry
               in investigating biological problems.
               A. I. Oparin, Academician, spoke about the formation of life
               in the light of the achievements of modern natural science.
               N. I. Grashchenkov's report dealt with the Lenin's reflex theory
               and modern physiology of the sensual organs.
               A. I. Zhdanov opposed the opinion expressed by M. A. Cnel-
               vanovskiy who said that in the capitalist countries a crisis
               in physics is approaching.

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SOV/53-60-4-6/12

SOV(S),
AUTHOR: None Given

TITLE: All-Union Conference on Philosophic Problems of Modern Natural Science (Vsesoyuznoye soveshchaniye po filosofskim voprosam estvennogo yestestvoznaniya) By the Editor (Ot redaktsii)

PERIODICAL: Uspekhi fizicheskikh nauk, 1959, Vol 68, Nr 4, pp 717-727 (USSR)

ABSTRACT: The above conference took place at Moscow in October 1958; it was attended by more than 600 scientists, among them 20 Academicians and 30 Corresponding Members, AS USSR, as well as by delegates from Bulgaria, Hungary, East Germany, and Czechoslovakia. The following lectures delivered at the conference are listed: Academician M. E. Mishin (on Lenin's book: "Materialism and Empiriocriticism"), Academician AS UzrSSR M. E. Omel'yanovskiy (Vv. I. Lenin and the Philosophical Problems of Modern Critics"), Doctor of Philosophical Science I. V. Kuznetsov ("On the Relationship of the Forms of Motion of Matter in Nature"), Academician L. A. Fok ("Interpretation of Quantum Mechanics" - already published in Uspekhi fizicheskikh nauk, 1957, Vol 62, Nr 4), Corresponding Member AS USSR A. D. Aleksandrov ("The Philosophical Content of and the

Card 1/3

Significance of the Theory of Relativity"), Academician V. A. Ambartsumyan (Some Methodological Problems of Cosmogony", Academician A. V. Sobolev and Professor A. A. Lyapunov (Cybernetics and Natural Science"), Corresponding Member AS USSR D. I. Blokhintsev and Academician V. A. Engel'gardt ("On the Part Played by Physics and Chemistry in the Investigation of Biological Problems"), Academician A. I. Oparin (" The Problem of the Origin of Life in the Light of the Progress made by Modern Natural Science"), and, finally, Corresponding Member AS USSR I. S. Gitel'mak of the Sensory Organs"), about and the Modern Physiology ("Lenin's Theory of Reflection 50 delegates took part in the discussion of these lectures first, the introductory speech delivered by the President of the AS USSR, Academician A. N. Nesmeyanov, is reproduced, and as is the closing speech by Corresponding Member AS USSR P. N. Fedoseyev, and finally a resolution passed by the All-Union Conference on philosophical problems of modern natural science is given under the title "On the Tasks of dealing with Philosophical Problems of Natural Sciences". The resolution essentially contains an appeal for the

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investigation of all new scientific facts in the sense of the theory of Marx and Lenin and of dialectic materialism for adaptation of ideas to the resolution of the 20th Party Congress, cooperation of institutes, coordination of research work, as well as some problems of organization. In conclusion, a list of printed works is given, in which the lectures delivered during the conference were published. There are 8 Soviet references.

Card 3/3

SOV/109-3-12-1/13

AUTHORS: Fok, V.A., Vaynshteyn, L.A. and Belkina, M.G.

TITLE: Duct Propagation of Radio Waves in the lowest Layer of Troposphere   (Rasprostraneniye radiovoln po prizemnomu troposfernomu volnovodu)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 12, pp 1411 - 1429 (USSR)

ABSTRACT: The work is devoted to the theory of propagation of radio waves in the tropospheric waveguide (inversion layer), which is elaborated on the assumption that the points of transmission and reception are both inside the waveguide. This type of propagation can be referred to as the inside-layer propagation. The basic formulae of the work are taken from a number of the authors' previous works (Refs 1-3). It is assumed that the attenuation coefficient for the case when the refraction index of the atmosphere is an arbitrary function of height can be expressed by:

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SOV/109-3-12-1/13

Duct Propagation of Radio Waves in the Lowest Layer of
Troposphere

$$V(x, y, y', q) = \sqrt{\frac{x}{\pi}} \, e^{-i\frac{\pi}{4}} \int_C e^{ixt} F(t, y, y', q) dt \quad (1)$$

where the contour C extends over all the poles of the
integrated function in the positive direction. If the
parameter $q = \infty$, which corresponds to an arbitrary
polarisation at cm and short waves and to horizontal
polarisation at longer waves, the integrated function F
can be written as shown in Eq (2), where y and y' are
normalised heights of the point of transmission and the
point of reception, as defined by Eqs (3). The parameter
x is the normalised distance between the two points, as
expressed by Eq (4), where the parameter m is given by
Eq (5) in which a is the radius of the Earth. The
functions f_1 and f_2 are the independent solutions of
the differential equation which is expressed by Formula (6).
The function $p(y)$ in Formula (6) depends on the
Card2/7 refractive index $M(h)$ in the manner shown in Eq (7) ,

where n is the refractive index for the air. The sub-integral function F , for the case of the inside-waveguide propagation, can be expressed by Eq (20), where $\wedge$ is defined by Eq (21). Various auxiliary functions in Eqs (20) and (21) are defined by Eqs (12) - (19). The attenuation coefficient V can be represented as a series:

$$V(x, y, y') = 2 \sqrt{\pi x} \cdot e^{i \frac{\pi}{4}} \sum_{m=1}^{\infty} R_m e^{ixt_m} \qquad (22) ,$$

where R_m is the residue of the function F at the m-th

pole t_m . The expression for R_m is therefore in the form

of Eq (24). Most of the numerical results presented in this work are based on the use of Eqs (22), (23) and (24). The accuracy of these equations is borne out by the fact that the attenuation coefficient evaluated by using them is only slightly different from that determined by using accurate formulae; the results are indicated in Figures 1. The heavy curves of Figures 1 were found from the accurate

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Duct Propagation of Radio Waves in the Lowest Layer of the
Troposphere

formulae (Eqs (25) and (26)) while the fine curves
correspond to the results obtained from Eqs (23) and (24).
The functions f_1 and f_2 of Eq (2), which are referred
to as the height factors, can be evaluated by using the Airy
functions. Thus, it is shown that f_1 and f_2 are
in the form of Eqs (31), where $\mathbf{v}_1$ and $\mathbf{v}_2$ are given by
Eqs (32); ξ_1 is found from Eqs (33), for which y_1
is the smaller root of Eq (34); v and u in Eqs (32)
are the Airy functions. From Eqs (31), it follows that R_1
can be expressed by Eq (36). If R_1 is evaluated
approximately by employing Eq (24) and more accurately by
employing Eq (36), it is found that Eq (24) gives erroneous
results. This is shown in Table 2, where R_1 is evaluated
for two values of Y and two values of y_1. In this case,
it is therefore necessary to employ Eqs (31), (32) and (33).
The attenuation coefficient V is dependent on x, y and y'
Card4/7 and on the function $p(y)$ which is dependent on the

Duct Propagation of Radio Waves in the Lowest Layer of Troposphere

parameters y_i and y_l . The function $p(y)$ is charact-
erised by three parameters which are expressed by Eqs (38),
(39) and (40). These parameters are shown in Tables 3a
and 3b for two groups of propagation conditions (see
p 1418). The curves of $p(y) - p(y_i)$ for all the cases
of Tables 3 are shown in Figures 2. The attenuation
functions for these cases are shown in Figures 3 and 4. The
curves of Figures 2, 3 and 4 can be used to investigate
the conditions of actual propagation routes. The conditions
represented by the first row of Table 3a and the first row
of Table 36 were chosen for special investigation. The
results are shown in Figures 10, 11 and 12; Curves 1 in
these figures correspond to the wavelength of 3.33 cm,
Curves 2 are for the wavelength of 10 cm, Curves 3 are
for 30 cm, Curves 4 of Figure 10 are for the 90 cm wavelength.
In an earlier work (Ref 3), it was shown that Eq (23) can
be written as Eq (45), where m is the number of a given
root and s_1 is in the form of the integral given by

Card5/7   Eq (46). Eq (45) can also be written in the form of Eq (52)
where G is expressed by Eq (53) and z_1 is the root of

Duct Propagation of Radio Waves in the Lowest Layer of
Troposphere

Eq (54). From Eq (52) and Eq (55), it follows that the
critical wavelength for the tropospheric waveguide is in
the form of Eq (58). The term "critical wavelength" does
not imply a discontinuity in the attenuation coefficient
of the system; it is therefore a purely arbitrary term.
It is of interest to find what factors, apart from $M(0)$
and $M(h_i)$, determine the magnitude of the critical wave-

length. It is found that $M''(h_i)$ is also one of the

principal parameters which determines the value of the
attenuation coefficient. This is borne out by the fact that
the factor $\varkappa_m$, which is defined by Eq (67), can be

expressed in the form of Eq (70). By employing parameters
h, $M(0)-M(h_i)$ and $M''(h_i)$, it is found that the attenuation

coefficients for simple waves are approximately equal for
widely differing types of propagating conditions, i.e.
M-profiles. This means that it is necessary to take into
account also some additional parameters but this problem has
not yet been solved. One of the most important results of

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Duct Propagation of Radio Waves in the Lowest Layer of Troposphere

the analysis is the fact that long-distance tropospheric
propagation of the waveguide type is only slightly
dependent on the wavelength. Thus, even if the propagated
wavelength is longer by an order than the critical wave,
 a long-distance propagation is still possible. The
calculations for this work were carried out by the
mathematical group, consisting of O.A. Merkulova,
V.M. Khapayeva, A.M. Soboleva, L.Ye. Molodtsova,
Z.G. Repina and A.G. Mayorova. There are 17 figures,
4 tables and 7 references, 3 of which are English and
4 Soviet.

SUBMITTED: June 1, 1957

Card 7/7

F o c k   V A /

CZECHOSLOVAKIA/Theoretical Physics - Quantum Mechanics

B-4

Abs Jour : Ref Zhur - Fizika, No 9, 1958, No 19636

Author   : Fock, V.A.
Inst   : Not Given
Title   : On the Interpretation of Quantum Mechanics

Orig Pub : Ceskosl. casop. fys., 1958, 8, No 1, 3-14; Sm. RZhFiz, 1958
           No 5, 9911

Abstract : See Referat Zhur Fizika, 1958, No 5, 9911.

Card   : 1/1

3

FOK, V.A.; FEDOROV, A.A.

Diffraction of a plane electromagnetic wave on an ideally con-
ducting paraboloid of revolution. Zhur. tekh. fiz. 28 no.11:
2548-2566 N '58.   (MIRA 12:1)
                    (Electric waves)

KURCHATOV, I.V., akademik;SEMENOV, N.N., akademik; TOPCHIYEV, A.V.,
    akademik; ALEKSANDROV, A.P., akademik; IOFFE, A.F., akademik;
    FOK, V.A. akademik; VUL, B.M.

Outstanding scientific discovery; on the awarding of the
Nobel prize in physics to the Soviet scientists P.A. Cherenkov,
I.E. Tamm, I. M. Frank. Vest.AN SSSR 28 no.12:7-9 D '58.

1. Chlen-korrespondent AN SSSR (for Vul).
                (Cherenkov radiation)

24(5)

Akademiya nauk SSSR. Institut filosofii

Filosofskiye voprosy sovremennoy fiziki (sbornik); (Philosophical Problems of Modern Physics;Collection) Moscow, Izd-vo AN SSSR, 1959. 426 p. Errata slip inserted. 7,000 copies printed.

Ed.: I. V. Kuznetsov and M. E. Omel'yanovskiy; Ed. of Publishing House: V. L. Morez; Tech. Ed.: S. G. Markovich.

PURPOSE: This book is intended for physicists but may be read gainfully by other scientists and the educated layman interested in the philosophical questions of advanced physics.

COVERAGE: This book contains 12 articles on philosophical problems in physics. Problems are divided into three subject divisions: 1) general problems; 2) problems of quantum theory; 3) problems in the theory of relativity. The views of Einstein, Bohr, Born, Planck, Pauli, Schrödinger, Heisenberg, Janossy, et al. are presented and subjected to criticism from the Soviet side by Omel'yanovskiy, Fok, et al. Questions dealing with idealism, agnosticism, and dialectical materialism in the philosophy of physics are discussed. This collection of articles is the third in a series under the same title. Earlier volumes were published in 1952 and 1958. References accompany each article.

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FOK, V.A.

PHASE I BOOK EXPLOITATION   SOV/3493

Vsesoyuznoye soveshchaniye po filosofskim voprosam yestestvoznaniya

Filosofskiye problemy sovremennogo yestestvoznaniya; trudy sovesh-
chaniya...(Philosophic Problems of Modern Natural Science;
Transactions of the All-Union Conference on Philosophic Problems
of Natural Science) Moscow, Izd-vo AN SSSR, 1959. 663 p.
Errata slip inserted. 6,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR.

Ed. of Publishing House: A.I. Kopanyeva; Tech. Ed.: I.N. Dorokhina;
Editorial Committee: P.N. Fedoseyev, Corresponding Member, Academy
of Sciences USSR (Chairman), B.M. Vul, Corresponding Member, Academy
of Sciences USSR, M.E. Omel'yanovskiy, Academician, Academy
of Sciences UkrSSR, N.N. Sisakyan, Corresponding Member, Academy
of Sciences USSR, V.N. Stoletov, Professor, and Ye.M. Cheaukov,
Candidate of Philosophical Sciences (Scientific Secretary)

PURPOSE: This book is intended for natural scientists and philosophers
who are interested in coordinating Communist philosophy with science.
COVERAGE: This is a publication of the transactions of the All-Union
Conference on Philosophic Problems of Natural Science which took
place in Moscow, October 21-25, 1958. The conference was
attended by 20 academicians and 30 corresponding members of the
Academy of Sciences USSR, 15 academicians and 34 members of re-
public and special academies, 186 university and college workers,
280 workers of scientific research institutes, and 75 Party
officials. The purpose of the Conference, as expressed by the
Chairman of the Organization Committee, K.V. Ostrovityanov, was
to unite the efforts of Soviet philosophers and scientists in
the dialectical-materialistic interpretation of the achievements
of modern science, and to provide the philosophical background
required for the study of modern scientific problems.

Mitin, M.B., Academician. A Great Ideological Instrument for the
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DISCUSSION OF REPORTS

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Card 4/11

24(5)

AUTHOR: Fok, V. A.

TITLE: On the Canonical Transformation in Classical and Quantum Mechanics

ABSTRACT: The present paper investigates more closely the similarity of the unitary operational transformation to the tangential transformation of classical mechanics. The transformation functions for both cases have the following form:
$S = S(q_1, \ldots\ldots\ldots q_n; Q_1, \ldots\ldots\ldots Q_n)$ and their tangential function is determined by the differentials:

$$\sum_{r=1}^{n} P_r dq_r - \sum_{r=1}^{n} P_r dQ_r = dS; \quad p_r = \frac{\partial S}{\partial q_r} \quad \text{and} \quad P_r = \frac{\partial S}{\partial Q_r} \quad (3) \text{ follows}$$

herefrom. This solution is possible in all cases as its determinant is unequal to 0. In quantum mechanics a tangential transformation means a unitary transformation of the representation, where q denote the diagonal to the representations in which Q are the diagonals. The matrix of the transformation operator

Card 1/3

On the Canonical Transformation in Classical and   SOV/54-59-3-12/21
Quantum Mechanics

has the following form:

$(Q'|F^*|Q) = \int \bar{\Psi}_{Q'}(q) F\Psi_Q(q)dq$. The eigenfunction $\Psi_Q(q)$ may be

expressed by a special unitary operator so that $F^* = UFU^{-1}$. For
the orthogonal transformation and in semiclassical approximation
and the relationship

$S-S' = \sum_{r=1}^{n} (Q'_r - Q_r) \frac{\partial S}{\partial Q_r} = S-S' = (Q-Q')P$ the following is obtained

with

$\int \bar{\Psi}_{Q'}(q)\Psi_Q(q)dq = c^2 \int e^{\frac{i}{\hbar}(Q-Q')P} \left| \frac{\partial S^2}{\partial Q \partial q} \right| dq$. The Jakobi-transforma-

tion is obtained with P_r according to (3), and by the intro-
duction of the δ-function the following simplified form:

Card 2/3 $\int \bar{\Psi}_{Q'}(q)\Psi(q)dq = \delta_0(Q-Q')$. The operator F expressed in q_r and p_r

On the Canonical Transformation in Classical and   SOV/54-59-3-12/21
Quantum Mechanics

$P_r = -ih \frac{\partial}{\partial q_n}$. By the effect of the operator upon the function

$\exp(\frac{i}{h}S)$ an approximation of this function is attained and
consequently the expression $F(q,p) = F(q(Q,P), p(Q,P)) = F^*(Q,P)$ is
obtained, and thus, for

$(Q'|F^*|Q) = c^2 \int F^*(Q,P) e^{i/h(Q'-Q)P} dP$. The operator $-ih\frac{\partial}{\partial Q'}$

applicable to P is reintroduced for the computation of the inte-
gral, and the operator F^* is set up from the integral, and for the
rest δ-function is re-introduced; thus, the following simplified
expression is obtained:

$(Q'|F^*|Q) = F^*(Q, -ih\frac{\partial}{\partial Q'}) \delta_0(Q-Q')$. Therefore, it is possible that
$F(q,p) = F^*(Q,P)$ which contains the S-function in the expressions

$p = \frac{\partial S}{\partial q}$ and $P = -\frac{\partial S}{\partial Q}$.

SUBMITTED: April 15, 1959
Card 3/3

AUTHOR: Fok, V.A.   SOV/109-4-4-23/24

TITLE: Concerning the Letter to the Editor by R.G. Mirimanov
           (Po povodu pis'ma v redaktsiyu R.G. Mirimanova)
           (Letter to the Editor)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 4,
             p 730 (USSR)

ABSTRACT: A letter by R.G. Mirimanov appeared in this journal in
           1958 (Nr 7, p 971). In connection with the letter, the
           author finds it necessary to communicate the following.
           Some time ago, he received a letter from Professor J.B.
           Keller, New York University, Institute of Mathematical
           Sciences, in which it was pointed out that R.G. Mirimanov
           committed a plagiarism with respect to a number of the
           works of Keller and his associates (Ref 3). The author
           investigated the complaint and found that, in fact, the
           formulae from the Mirimanov paper (Ref 2) coincide almost
           exactly with those of Keller and his associates, except
           that the unknown function is denoted with a symbol φ
           instead of p . As regards the other works of R.G.Mirimanov
   Card1/2 (which he mentioned in his letter to the editor) these are

l   SOV/109-4-4-23/24
Concerning the Letter to the Editor by R.G. Mirimanov (Letter to
the Editor)

      regarded as a collection of formulae, the major portion
      of which are copied from Keller and his co-authors
      without understanding their meaning. The letter from
      Professor Keller was sent to the author (and not to
      Mirimanov) in view of the fact that the author sponsored
      the first paper by Mirimanov (Ref 1). There are
      3 references, 2 of which are Soviet and 1 English.

SUBMITTED: October 3, 1958

Card 2/2

Canonical transformation in classical and quantum mechanics.
Vest.LGU 14 no.16:67-70 '59.   (MIRA 12:10)
     (Transformations (Mathematics))

24.3000

75324
SOV/57-29-10-1/

AUTHORS: Kapitsa, P. L., Fok, V. A., Vaynshteyn, L. A.

TITLE: Certain Boundary Problems for a Hollow Cylinder of Finite Length

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1959, Vol 29, Nr 10, pp 1177-
             1187 (USSR)

ABSTRACT: The paper considers the electrostatic potential of an ordinary
             layer of charges distributed at a certain surface density over
             a hollow cylinder of finite length. Such a cylinder may be a
             piece of a round tubing. The purpose of the study is to develop
             a general method of solution of integral equations for electrostatic
             problems giving the relationship between the surface density and
             its potential in conducting cylinders of finite length. Such
             problems frequently occur in mathematical physics, there being
             no general method for their solution. When the length of hollow
             cylinders is sufficiently big the problem is practically equiv-
             alent to a case of solid cylindrical conductors. The paper is of
             a highly mathematical nature. A hollow cylinder is represented in
             cylindrical coordinates, and a Laplacian equation for the potential

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Static Boundary Problems for a Hollow Cylinder of
Finite Length

V_s of an ordinary layer of surface charge of density S is
written. It is stated that this equation may be reduced to
an infinite number of linear equations, if the known function
V_s (z) may be resolved within $-L < z < L$ (L being one half of
the length of the cylinder) range into a series of any system
of functions. The equation may also be applied to sufficiently
short cylinders (narrow rings) when $L/n \ll 1$, where a represents
the radius of the cylinder. Each of the infinite number of
linear equations is the summation of A_{nq} Uq products, where
U_q are unknown coefficients and $A_{\mu\nu}$ represents the system
coefficient. For very long cylinders the system coefficients
A ... of L/a. Two methods are discussed for
the ... of $A_{\mu\nu}$ coefficients. The first method ap-
plies to relatively short cylinders where $0 < L/a < 1$. Here the
A ... represented as a summation of a convergent
series ... functions, and at values $L/a < 1$ an explicit
... these coefficients may be had by using the iterative
method. The second method discusses cases where L/a ... 1. Using
Mellin's transformation [Ref 4], Bessel and Gamma functions
... Meyer functions [Ref 2], A ... is represented ...

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Static Boundary Problems for a Hollow Cylinder of   75324
Finite Length   SOV/57-29-10-1/18

                    matrix form the solution of which results in a fourth-order
                    linear differential equation which can be applied to cases where
                    $L/a > 1$ as well as to those where $L/a < 1$. The shape of this
                    fourth-order equation is suitable for the solution on high-
                    speed computing machines of electrostatic problems of the type
                    discussed. There are 6 references, 1 Soviet, 3 U.S., 1 Swedish,
                    1 non-Soviet.

ASSOCIATION: Institute for Physical Problems, Academy of Sciences, USSR, Moscow
                    (Institut fizicheskikh problem, AN SSSR)

SUBMITTED: March 4, 1959

Card 3/3

9.1000,24.3000

75325
SOV/57-29-10-2/18

AUTHORS: Kapitsa, P. L., Fok, V. A., Vaynshteyn, L. A.

TITLE: Symmetrical Electrical Oscillations of an Ideally Conducting Hollow Cylinder of Finite Length

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1959, Vol 29, Nr 10, pp 1188-1205 (USSR)

ABSTRACT: The subject matter of the paper is the problem of electromagnetic oscillations of an ideally conducting cylinder. It is a problem with which radio engineering is concerned when antenna vibrators are designed. This study, however, is limited to the case when current density on the surface of the cylinder is uniform and has a longitudinal component only, but it applies to very thin as well as to larger-size solid conductors. Oscillations that take place in such cases are called symmetrical electrical oscillations. The study is of a highly mathematical nature. Basically, it operates · with two functions: potential V, which is known, and current density U, which is unknown. The reasoning starts with an integral equation of the potential written within boundary conditions of the

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Symmetrical Electrical Oscillations of an Ideally   75325
Conducting Hollow Cylinder of Finite Length   SOV/57-29-10-2/18

surface of the cylinder so as to satisfy the Sommerfeld radiation
principle. After the application of Bessel, Macdonald, and Hankel
functions to the solution of this equation, and using the Neumann
multiplier and Legendre polynomial, a relationship in the form
of an integral equation is obtained between the V and the U functions.
This latter equation is then transformed into an infinite system of
linear equations relating V and U. In order to accomplish this an
approximate expression is developed for the potential function V
resolved in a Fourier series. The approximate expression is good
for conditions when $a/L \ll 1$ and $ka^2/2L \ll 1$, where L is one
half of the cylinder length, a is its radius, and $k = 2\pi/\lambda$; λ
being the wavelength. The current density function U may also
be resolved in a Fourier series for any even or odd function.
It is stated that when the function V is neither even nor odd
it may always be represented as a sum of the even and odd functions,
for each of which a corresponding U function, even and odd, must
be found. The sum of the latter will give the sought-for current
on the surface of the cylinder. The coefficients of the members of
these equations, resolved in series, form infinite matrices. These
are resolved into the sum of the diagonal matrix and the general

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Symmetrical Electrical Oscillations of an Ideally   75325
Conducting Hollow Cylinder of Finite Length   SOV/57-29-10-2/18

one; expressions are then given for their computation, and it is
shown that a solution may be obtained without the necessity of
calculating the determinants but by the application of the
iterative method. Prior to using this method, however, the
undetermined constants of the equations must first be found, for
the calculation of which formulas are developed. The developed
theory is compared with the theory of thin antenna vibrators.
A distinction is made between short vibrators, with $k \ll g$, and
long vibrators, with $k \gg g$ (here, $g = \pi/2L$; the other symbols
have already been defined). The fact that electrostatic charges
accumulate at the ends of the vibrators causes the error in short
vibrators to be greater than in the long ones. In either case
current distribution along the axis of the vibrator is similar
to that in an open-circuit homogeneous transmission line. Con-
ditions are given for the system of equations to have full reg-
ularity, in which case they represent cylinders that are very thin,
with $a \rightarrow 0$, and to the solution of which the iterative method may
be applied [Ref 3]. The method discussed in the paper may also be
applied to the solution of electrostatic problems. The difference
Card 3/4   between this method and the one proposed in Ref 2 is that in the

Symmetrical Electrical Oscillations of an Ideally   75325
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latter the density of the electric charge on the surface of a
hollow cylinder was represented by a series each member of
which showed absence of a requirement for a charge at the ends
of the cylinder, while in the presently proposed method the poor
convergence of the series signifies that charges are being concen-
trated at the cylinder ends. The ends of the cylinder have effect
only in case of short cylinders $(L/a \sim 1)$. When long cylinders
are being considered $(L/a \gg 1)$, the proposed method may well be
used. For large values of kL this method is cumbersome. In such
a case, if the antenna vibrator is thin $(ka \ll 1)$, the method given
in Ref 6 is the more preferable. The method discussed in this
paper is suitable for the solution on high-speed computing machines
of the type of problems discussed. There are 6 references, 4 Soviet,
1 U.S., 1 Swedish.

ASSOCIATION: Institute for Physical Problems, Academy of Sciences, USSR, Moscow
                (Institut fizicheskikh problem, AN SSSR)

SUBMITTED: March 4, 1959

Card 4/4

AUTHOR: Fok, V. A. _____   ...../55-66-4-3, 10

TITLE: Remarks on the Article by Bohr on His Discussions With
Einstein (Zamechaniya k stat'ye Bora o yego diskussiyakh s
Eynshteynom)

PERIODICAL: Uspekhi fizicheskikh nauk, 1957, Vol 66, nr 4, pp 599-602
(USSR)

ABSTRACT: Fok, one of the two translators of Bohr's article published in
this issue (p 571) makes some remarks on the problems dis-
cussed by Bohr with special consideration of those concerning
quantum mechanics. These remarks are mainly the results of
discussions between the author and Bohr on the occasion of
his stay (Fok's) in Copenhagen (February–March 1957). There
are 4 references, 3 of which are Soviet.

Card 1/1

AUTHORS: Fok, V. A., Academician,   Kuni, F. M.   SOV/20-127-6-14/51

TITLE: On the Introduction of a "Quenching" Function in the Dispersion
               Relations

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 6, pp 1195-1198
               (USSR)

ABSTRACT: The object of the present paper is the proof of the analytical
               continuation of the scattering amplitude into the upper half
               plane, into the so-called "physical"range of energy. The idea
               of the proof consists in the introduction of a weight func-
               tion into the Cauchy formula. In the first part, a limited
               range in the complex plane is used as a basis, and the proof
               of the analytical continuation is given by means of two
               theorems. By means of the results obtained, the dispersion
               relations are investigated, and the function describing the
               energy of the dispersing particles is conformally transformed
               into a semicircle $|z| \leqslant 1$, and it is ascertained that the
               problem of the analytical continuation is identical in both
               planes. The transformed function is then introduced into
               equations (1a) and (3), and the equations (5) and (6) are ob-
               tained. Equation (5) expresses the value of the scattering
Card 1/2   amplitudes in the upper half plane of energy by its value

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in the "physical" range of energy, and equation (6) is the
condition of the analytical continuation. Finally, the dis-
persion of protons on protons is dealt with as an example.
There are 3 figures and 6 references, 2 of which are Soviet.

SUBMITTED: May 29, 1959

Card 2/2

FCK, V. A.

Note on the N. Bohr's article "Discussion with Einstein on episterological problems in atomic physics." Pokroky mat fyz astr 5 no. 1:11-113. '60

FOK, V.A.

Comparison of different coordinate conditions in Einstein's theory
of gravitation. Zhur. eksp. i teor. fiz. 38 no.1:108-115 Jan
'60.   (MIRA 14:9)

1. Leningradskiy gosudarstvennyy universitet.
                        (Gravitation)

83584

S/056/60/038/005/017/050
B006/B070

24.4400

AUTHOR: Fok, V. A.

TITLE: Einsteinian Statics in Conformal Space

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
            Vol. 38, No. 5, pp. 1476-1485

TEXT: In his work on the theory of gravitation, Levi-Civita has not
considered the fact that in the static case the space and time coordinated
may be completely separated from each other in many different ways. In the
present work, the author shows that the most natural method of separating
space and time coordinates is that in which the metric of the space is
conformally related with the metric usually employed. A space with such a
metric is designated by the author as conformal space. Such a space is
approximately Euclidean; in any case, it may be considered Euclidean with
greater accuracy than in the usual metric. Here, the coordinates which are
harmonic in the four-dimensional sense are harmonic also in the three-
dimensional sense. The known solutions of Einstein's equations for
spherical and axial symmetry are particularly easy to derive if one starts

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Einsteinian Statics in Conformal Space   S/056/60/038/005/017/050
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from the gravitational equations in the conformal space. Some further
advantages of this metric are emphasized. The Levi-Civita transformation
and the transition to the conformal space are then treated in different
sections of the paper. While Levi-Civita sets the form $ds^2 = c^2 v^2 dt^2 - a_{ik} dx_i dx_k$,
Fok gives the relation $ds^2 = c^2 v^2 dt^2 - (1/v^2) h_{ik} dx_i dx_k$ or $ds^2 = c^2 v^2 dt^2 -$
$- (1/v^2) d\sigma^2$. Then, $\sqrt{-g} = (c/v^2)\sqrt{h}$ (h is the determinant of h_{ik}), dl^2
$= (1/v^2) d\sigma^2$, $a_{ik} = (1/v^2) h_{ik}$, and $a^{ik} = v^2 h^{ik}$. The four-dimensional invariant
(R) $= 2v\Delta v - 4v_j v^j - v^2 R$, and the components of the Einsteinian tensor
$G_{\mu\nu} = (R_{\mu\nu})_g - \frac{1}{2} g_{\mu\nu} (R)_g$ are given by $G_{ik} = H_{ik} + 2(v_i v_k)/v^2 - h_{ik}(v_j v^j/v^2)$,
$G_{oo} = c^2 v^2 \{ -v^2 H - 2v \, v + 3v_j v^j \}$. Here, H_{ik} is a three-dimensional con-
servative tensor of the conformal space, and H is its invariant ;
$H_{ik} = R_{ik} - \frac{1}{2} h_{ik} R$; $H = - \frac{1}{2} R$. $R_{ik} = H_{ik} - h_{ik} H$. In the following section,
the Einsteinian equations are treated in conformal space. It is shown that
the equations of Einsteinian statics in conformal space are simple in form

Card 2/3

SUBMITTED: December 21, 1959

Card 3/3

FOK, Vladimir Aleksandrovich; NOVOZHILOV, Yu.V., red.; LUK'YANOV, A.A.,
        tekhn. red.

[Theory of space, time, and gravitation] Teoriia prostranstva,
vremeni i tiagoteniia. Izd.2., dop. Moskva, Gos.izd-vo fiziko-
matem.lit-ry, 1961. 563 p.   (MIRA 15:1)
                        (Relativity (Physics))

AUTHOR: Fok, V. A.

TITLE: On the role of principles of relativity and equivalence in Einstein's
              theory of gravitation

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 9, 1962, 75,
              abstract 9A525 ("Vopr. fflosofii", 1961, no. 12, 45 - 52, 184,
              English summary)

TEXT: The author analyzes principles laid by Einstein in the base of the
theory of gravitation. He arrives at the conclusion that the so-called "principle
of equivalence" and "general relativity principle" do not actually constitute the
basis of Einstein's theory; they served as "construction scaffolding" in the peri-
od of creating the theory. These principles were needed by the creator of the the-
ory of gravitation to overcome difficulties connected with necessity of expressing
completely new ideas by means of old concepts. In the author's opinion, the follow-
ing principles were actually laid into the basis of the gravitation theory:
1) Amalgamation of space and time into a single four-dimensional manifold with in-
definite metric; 2) the assumption that physical processes affect the metric and

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Card 2/2

FOK, V. A.

"On the transverse diffusion of short waves diffracted by a convex cylinder"

Paper to be presented on RADIO (SCIENTIFIC) UNION, INTERNATIONAL (URSI) - Symposium on Electromagnetic theory and Antennas - Copenhagen, Denmark, 25-30 Jun 62

1. Institute of Physics imeni P. n. Lebedev, Academy of Sciences USSR

FOK, V.A. [Fock, V.A.]

Kinematic and gravitational effects on the reading of a clock in free motion. Bul Ac Pol mat 10 no.8:447-450 '62.

1. Leningradskiy gosudarstvennyy universitet. Presented by L. Infeld.

S/056/62/042/004/035/037
B102/B108

AUTHOR: Fok, V. A.

TITLE: The uncertainty principle of energy and time and an attempt
            to disprove it

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42,
            no. 4, 1962, 1135 - 1139

TEXT: The author discusses two possible forms and their interpretations
of the energy and time uncertainty principle: the Heisenberg principle
$(\Delta(E'-E)\Delta t > h)$, and another variety which comprises two forms. One is a
consequence of the Fok-Krylov theorem (ZhETF, 17, 93, 1947; J. of Phys.
USSR, 11, 112, 1947), the other was established by Mandel'shtam and Tamm
(Izv. AN SSSR, seriya fizich., 9, 122, 1945; J. of Phys. USSR, 9, 249,
1945). These two forms are represented by $\Gamma T_{1/2} = (h/2)\ln 2$ and

$\Delta H \Delta T \geqslant h/2$; Γ is the level width entering the dispersion relation, $T_{1/2}$
is the half-life. The latter relation is not equivalent to the Heisen-
berg relation. The attempt made by Aharonov and Bohm (Phys. Rev. 122,
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The uncertainty principle ...

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1649, 1961) to disprove the Heisenberg principle is criticized. They have tried to interprete the uncertainty principle according to Fok and Krylov and introduced into the Hamiltonian an interaction term involving a discontinuous function of time $g(t)$: $H = (1/2m)p_x^2 + (1/2m)p_y^2 + yp_x g(t)$.

This representation implies that instantaneous energy changes of a predictable amount could be observed at a given instant, which hypothesis would be a violation of the uncertainty principle. Aharonov and Bohm have based their criticism of the Heisenberg principle on a logical error (petitio principii). A correct treatment of the problem leads to the Heisenberg principle.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: December 9, 1961

Card 2/2

AMBARTSUMYAN, V.A., akademik; ASRATYAN, E.A.; BOGOLYUBOV, N.N.,
akademik; VINOGRADOV, A.P., akademik; GINETSINSKIY, A.G.;
KNUNYANTS, I.L., akademik; KOCHETKOV, N.K.; KURSANOV, A.L.,
akademik; MEL'NIKOV, O.A.; NESMEYANOV, A.N., akademik;
NESMEYANOV, An.N., doktor khim. nauk; OBREIMOV, I.V.,
akademik; POLIVANOV, M.K., kand.fiz.-mat.nauk; REUTOV,O.A.;
RYZHKOV, V.L.; SPITSIN, V.I., akademik; TAMM, I.Ye., akademik;
FESENKOV, V.G., akademik; FOK, V.A., akademik; SHCHERBAKOV,
D.I., akademik; FRANK, I.M.; FRANK, G.M.; KHOKHLOV, A.S.,
doktor khim. nauk; SHEMYAKIN, M.M., akademik; ENGEL'GARDT,
V.A., akademik; SHAPOSHNIKOV, V.N., akademik; BOYARSKIY,V.A.;
LIKHTENSHTEYN, Ye.S.; VYAZEMTSEVA, V.N., red.izd-va; KLYAYS,
Ye.M., red.izd-va; TARASENKO, V.M., red.izd-va; POLYAKOVA,
T.V., tekhn. red.

[As seen by a scientis: From the Earth to galaxies, To the
atomic nucleus, From the atom to the molecule, From the
molecule to the organism] Glazami uchenogo: Ot Zemli do ga-
laktik, K iadru atoma domolekuly, Ot molekuly do organizma.
Moskva, Izd-vo AN SSSR, 1963. 736 p.   (MIRA 16:12)

1. Akademiya nauk SSSR. 2. Chlen-korrespondent AN SSSR (for
Asratyan, Ginetsinskiy, Kochetkov, Mel'nikov, Reutov, Ryzhkov,
Frank,I.M., Frank, G.M.)
   (Astronomy) (Nuclear physics) (Chemistry) (Biology)

FOK, V.A.

A.A.Fridman's works on Einstein's theory of gravitation. Usp.
fiz. nauk 80 no.3:353-356 Jl '63.   (MIRA 16:9)
            (Fridman, Aleksandr Aleksandrovich, 1888-1925)
                        (Gravitation)

FOK, V. A.

"The principle of relativity of Galileo, his generalization and its applications in the theory of gravitation of Einstein."

Report to be submitted at an International Meeting on "General Relativity: Problems of Energy and Gravitational Waves", Florence, Italy, 9-12 Sep 64.

FOCK, V. [Fok, V.A.] (Leningrad)

The principle of relativity and equivalence in the Einstein's
theory of gravitation. Fix szemle 14 no. 1: 12-18 Ja '64.

FOK

FOCK, V.A. (Leningrad)

Interpretation of quantum mechanics. Fiz szemle 14 no. 3: 90-100
Mr '64.

FOK, V.A.

Principles of Galilean mechanics and Einstein's theory.
Usp. fiz. nauk 83 no.4:577-582 Ag '64.   (MIRA 17:9)

KELER, V.R., otv. red.; MILLIONSHCHIKOV, M.D., akademik, red.;
BLOKHIN, N.N., red.; BLOKHINTSEV, D.I., red.; GNEDENKO,
B.V., akademik, red.; ZAYCHIKOV, V.M., red.; KELDYSH, M.V.,
akademik, red.; KIRILLIN, V.A., akademik, red.; KORTUNOV,
V.V., red.; MONIN, Andrey Sergeyevich, prof., doktor fiz.-
matem. nauk, red. (1921); NESMEYANOV, A.N., akademik, red.;
PARIN, V.V., red.; REBINDER, P.A., akademik, red.; SEMENOV,
N.N., akademik, red.; FOK, V.A., akademik, red.; FRANTSOV,
G.P., akademik, red.; ENGEL'GARDT, V.A., akademik, red.;
KREMNEVA, G., red.; BALASHOVA, A., red.; BERG,A.I.,akademik,red.

[Science and mankind, 1964; simple and precise information
about the principal developments in world science] Nauka i
chelovechestvo, 1964.; dostupno i tochno o glavnom v miro-
voi nauke. Moskva, Izd-vo "Znanie," 1964.   424 p.
                                          (MIRA 18:1)
1. Deystvitel'nyy chlen AMN SSSR (for Blokhin, Parin). 2. Chlen-
korrespondent AN SSSR (for Blokhintsev). 3. Akademiya nauk
SSSR Ukr.SSR (for Gnedenko).

FOK, V.A.

Further on the uncertainty relation for energy and time. Usp.
fiz. nauk 86 no.2:363-365 Je '65.

(MIRA 18:6)

FOK, V.A.; TULUB, A.V.

Use of the Laplace transform in solving problems in radiation
theory. Vest. LGU 20 no.16:7-20 '65.

(MIRA 18:9)

FOK, Vladimir Aleksandrovich; TSAR'KOVA, Z.I., red.

[Quantum physics and the constitution of matter]
Kvantovaia fizika i stroenie materii. Leningrad,
Izd-vo Leningr. univ., 1965. 27 p. (MIRA 19:1)

L 25632-66   EWT(d)/EWT(1)/T   IJP(c)

ACC NR: AP6016071   SOURCE CODE: UR/0054/65/000/003/0007/0020

AUTHOR: Fok, V. A.; Tulub, A. V.

ORG: none

TITLE: Application of Laplace transformation to problems in theory of radiation

SOURCE: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 3, 1965, 7-20

TOPIC TAGS: Laplace transform, quantum field theory, integral equation, differential equation

ABSTRACT: The system of atomic amplitude equations in the quantum field theory of radiation is transformed into a single integral-differential equation the solution of which may be obtained by using the Laplace transformation. The method developed is applied to the calculation of the natural line width, resonance fluorescence, and external field problems. Orig. art. has: 4 formulas. [Based on authors' Eng. abst.] [JPRS]

SUB CODE: 20, 12 / SUBM DATE: 05Apr65 / ORIG REF: 003 / OTH REF: 005

UDC: 535.14

Card 1/1

RADOVSKIY, M.I.; FOK, V.A., akademik

Vladimir Ivanovich Smirnov; on his 75th birthday. Usp.mat.
nauk 17 no.6:185-190 N-D '62.   (MIRA 16:1)
        (Smirnov, Vladimir Ivanovich, 1887-)

S/109/63/008/003/001/027
D413/D308

AUTHORS: Fok, V. A., and Vaynshteyn, L. A.

TITLE: Transversal diffusion in the diffraction of
                 short waves on a convex cylinder with smoothly
                 varying curvature. Part I

PERIODICAL: Radiotekhnika i elektronika, v. 8, no. 3, 1963,
                 363-376

TEXT: L. A. Vaynshteyn and G. D. Malyuzhinets (Radiotekhnika
i elektronika, v. 6, no. 8, 1961, 1247; v. 6, no. 9, 1961, 1489)
have derived a general asymptotic solution of the two-dimensional
diffraction problem for a circular cylinder of large radius; the
authors consider how to extend this solution to any arbitrary con-
vex cylinder whose radius of curvature is large compared with the
wavelength and varies smoothly. They reject a solution postu-
lated by analogy with the formula for the circular cylinder be-
cause it cannot be justified mathematically; by neglecting the

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Transversal diffusion...

longitudinal diffusion term, which can be shown to be small under the given conditions, they reduce the wave equation to an equation of parabolic type expressed in radial coordinates and consider substitutions which simplify its integration. In the particular case where the contour of the cylinder along the path of the diffraction wave is a segment of a spiral whose radius of curvature is proportional to the cube of the arc length measured from the focus, an exact separation of the variables in the parabolic equation is possible; by applying a generalized locality principle for expressing the incident wave, it is possible to obtain a unique asymptotic expression for the two-dimensional Green function which is valid in both umbra and penumbra at any distance from the surface of the cylinder. This result is in agreement with results obtained by W. Franz and K. Klante (IRE Trans., 1959, AP-7, Spec. Suppl., 68-70), and also J. B. Keller and B. R. Levy (IRE Trans., 1959, AP-7, Spec. Suppl., 52-61). Some consequences for plane-wave diffraction are examined, and possibilities for generalizing the results are discussed. The

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Transversal diffusion...

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authors thank G. D. Malyuzhinets for his advice.   There are 5 figures.

ASSOCIATION: Institut fizicheskikh problem AN SSSR (Institute of Physical Problems, AS USSR)

SUBMITTED: September 11, 1962

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S/109/63/008/003/002/027
D413/D308

AUTHORS: Fok, V. A., and Vaynshteyn, L. A.

TITLE: Transversal diffusion in the diffraction of
                  short waves on a convex cylinder with smoothly
                  varying curvature. Part II

PERIODICAL: Radiotekhnika i elektronika, v. 8, no. 3, 1963,
                  377-388

TEXT: Starting from the parabolic equation obtained in Part
I (Radiotekhnika i elektronika, v. 3, no. 3, 1963, 363), the
authors derive an asymptotic solution to the two-dimensional
problem of the diffraction of a cylindrical wave on an arbitrary
convex cylinder for any positions of the source and point of
observation in relation to the cylinder. The assumptions are
that the radii of curvature are large compared with the wave-
length, that the curvature varies relatively slowly, and that the
cylinder either is ideally reflecting or has an impedance para-
meter related in a certain manner to the curvature. Two expres-

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Transversal diffusion in the...   S/109/63/008/003/002/027
                                     D413/D308

sions are obtained whose zones of validity overlap and which,
between them, cover the whole of the umbra and penumbra regions;
they are quite different from the solution that could be postu-
lated by analogy with the case of the circular cylinder (see
Part I) and are shown to be much more accurate. There are 2
figures.

ASSOCIATION: Institut fizicheskikh problem AN SSSR (Institute
                 of Physical Problems, AS USSR)

SUBMITTED: September 11, 1962

Card 2/2

AMBARTSUMYAN, V.A., akademk; GINZBURG, V.L.; ZEL'DOVICH, Ya.B., akademik; PONTEKORVO, B.M.; SMORODINSKIY, Ya.A., doktor fiz.-matem. nauk, prof.; FOK, V.A., akademik, CHERNOV, A.G.; FAYNBOYM, I.B., red.

[Birth and evolution of the galaxies and stars; the third discussion] Rozhdenie i evoliutsiia gulaktik i zvezd; beseda tret'ia. [By] V.A.Ambartsumian i dr. Moskva, Izd-vo "Znanie," 1964. 27 p. (Novoe v zhizni, nauke, tekhnike. Seriia IX: Fizika, matematika, astronomiia, no.12)
(MIRA 17:6)

1. Chlen-korrespondent AN SSSR (for Ginzburg, Pontekorvo).

BURKSER, Ye.S. [Burkser, IE.S.]; BRADIS, L.M. [Bradis, IE.K.]; KUL'CKAYA,
O.A. [Kul's'ka, O.A.]; FOKA, G.M. [Foka, H.M.]

Trace elements in the peats of the Ukraine. Dop. AN URSR no.9:1222-
1226 '62.
                                                    (MIRA 15:4)

1. Institut geolcgicheskikh nauk AN UkrSSR. 2. Chlen-korrespondent
AN UkrSSR (for Burkser).

FOKA, M. N.

USSR/Chemistry - Physical chemistry

Card 1/1   Pub. 22 - 33/63

Authors   : Foka, M. N., and Burkser, L. E.

Title   : Mobility of S in thio-acids. Exchange reactions between elementary S and potassium ethylxathogenate

Periodical : Dok. AN SSSR 99/6, 1011-1014, Dec 21, 1954

Abstract   : A study of the interchange reaction between thioacetic acid and elementary S revealed a comparatively low mobility of S in this compound. Reverse addition of the elementary S to the double bond of $C = S$ acid, was found to be the mechanism of this interchange reaction. It was established that the S molecules are sufficiently mobile and contain easily polarizable electrons which bind the S atoms in these electrons. An increase in the polarity of the $C = S$ bond in the potassium ethylxanthogenate leads to an acceleration of the interchange reaction with the elementary sulfur. The rate of reaction is determined by the rate of decomposition of the intermedia polysulfide product. Nine references: 4-USA and 5-USSR (1939-1953). Tables.

Institution: The Medical Stomatological Institute, Kiev
Presented by: Academician A. N. Frumkin, June 24, 1954

1. FOKA, P. D.

2. USSR (600)

4. Moldavia - Alfalfa

7. Alfalfa seed culture on Moldavian state farms. Dost. sel'khoz. no. 6, 1952.

9. **Monthly List of Russian Accessions**, Library of Congress,   January, 1953. Unclassified.

Foka, P. D.

USSR/Soil Science - Cultivation, Amelioration, Erosion.   J-4

Abs Jour   : Ref Zhur - Biol., No 2, 1958, 5809

Author   : Foka, P.
Inst   : -
Title   : Harrowing Autumn Fallow

Orig Pub   : Zemledeliya i zhivotnovodstvo Moldavii, 1956, No 10, 16-17

Abstract   : The advisability, under Moldavian conditions, of harrowing
             early autumn fallow for grain crops is shown. The autumn
             plowing practiced here, which leaves the soil in ridges
             /grebnistaya/ worsens the physical properties of the soil.

Card 1/1

FOKANOV, I.G.

Economic efficiency of open arc welding at a shipyard. Avtom.
svar. 18 no.4:70-72 Ap '65.
(MIRA 18:6)

1. Institut elektrosvarki imeni Ye.O. Patona AN UkrSSR.

REKHOVSKIY, Yu.D.; FOKANOV, P.I.

New technology for bridge painting. Put' i put.khoz.4
no. 5:22 My '60.
(MIRA 13:11)

1.Rukovoditel' gruppy Nauchno-issledovatel'skogo instituta
mostov (for Rekhovskiy). 2. Zamestitel' nachal'nika distantsii,
stantsiya Volkhovstroy, Oktyabr'skoy dorogi (for Fokanov).
(Railroad bridges--Painting)

1. FOKANOV, V. A.

2. USSR (600)

4. Mammals - West Kazakhstan Province

7. Survey of the mammal fauna of the Ural foothill region of the West Kazakhstan Province, Trudy Zool inst.   No. 11 1952

9. Monthly List of Russian Accessions, Library of Congress, _____April_____ 1953, Uncl.

FOKANOV,V.A.

Mammals of the southern part of the Ural Valley. Trudy Zool.
inst. 16:117-136 '54.   (MIRA 8:6)
                 (Ural Valley--Mammals)

FORANOV, V.A.

Materials on the history of the development of the Holocene rodents in Badkhyz (southern Turkmenia). Biul. MOIP. Otd. biol. 69 no.4:51-56 Jl-Ag '64.   (MIRA 17:11)

SARKANY, Tamas; MARGITTAI, Pal; MELEG, Jozsef; FOKAS, Elemer

Linear problems of microwave connections: also, remarks by P.Margittai,
J.Meleg, and E.Fokas. Muszaki kozl MTA 26 no.1/4:35-53 '60.

(EEAI 9:10)

1. Tavkozlesi Kutato Intezet (for Sarkany)
   (Radio)   (Microwaves)

CA FOKASY, L.

15A

Flow capacity of suspended sprays. Lajos Kerekes and László Fokásy. *Agrártudomány* 1, 401-6(1949). Expts. showed that the detn. of the wt. of 1 l. spraying agent is not a reliable value when estg. the particle size of powders, nor when detg. the mono- or polydisperse character of a spray, nor when judging the floating capacity. For the detn. of the floating capacity the Hengl-Reckendorfer revolving sedimentating app. was most suitable. When testing Ca arsenate or Pb arsenate prepns. it was proved that the As content of the floating suspension did not show significant changes during sedimentation. In practice the detn. of the 5-min. and 30-min. sedimentation values is satisfactory, the graph for agents of poor floating capacity showing a break after 30 min.   István Finaly

R-4 16? FOKASY, L-

FÓKÁNY (L.). ~~Kiadatok a búza~~ ~~~~. [Experiments on the control of bunt infection of Wheat.]—*Agrirtudomdny (Agricultural Science)*, 1, 5, pp. 254-256, 1949. [Russian and English summaries.]

The only successful method of destroying the spores of *Tilletia tritici* [*T. caries*] and *T. foetens* [*T. foetida*] on wheat grain in Hungary [see preceding abstract] is by pickling (Linhart's basket method). As this does not protect from soil-borne infection the grain must also be coated with non-injurious, dry mercury caustic.

FOKASY, L.

Prevention of blight infection of wheat. II. László Fókásy (State Inst. Quality Control of Agr. Products, Budapest, Hung.). *Agrártudomány* 2, 51-6(1950); cf. C.A. 43, 8185g.—Germination expts. were made with pure $CuSO_4 \cdot 5H_2O$, with a $CuSO_4$ contg. 0.9% Fe sulfate, and with a mixt. of 90% $CuSO_4$ and 10% Fe sulfate. Wheat seeds were treated with 0.5-1.5% solns. of the above materials. $CuSO_4$ retarded germination for 2-3 days; after that no effect on plant growth was observed. The plants had on the 8th day the same height as untreated plants. This retarding effect was the same when the treated seeds were washed after treatment as when they were dried without washing. Fe sulfate as an impurity in $CuSO_4$ did not influence the germinating activity of wheat seeds.

István Finály

Fokasy, Laszlo

Hungary /Chemical Technology. Chemical Products   I-10
           and Their Application

           Pesticides

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31315

Author : Fokasy Laszlo

Title   : Determination of Volumetric Weight of Pulverulent
          Pesticidal Preparations

Orig Pub: Orszagos mezogazd. monosegvizsg. int. evk., 1952-
          1953 (1954), 2, 269-273

Abstract: No abstract.

Card 1/1

LAVRINOVICH, M.I.; FOKEYEV, G.S.

Redesign of automatic SHA-1 sluice gates. Obog. rud 4 no.6:
38-40 '59.   (MIRA 14:8)
                    (Ore dressing--Equipment and supplies)

FOKEYEV, N.I.

FOKEYEV, N.I.

Stability of tower cranes. Sbor.nauch.trud.TISI 1:40-51 '56.
(MIRA 10:12)
(Cranes, derricks, etc.)

FOKEYEV, N.I.

Determining track weight and gauge in designing cranes. Sbor.nauch.
trud.TISI 2:90-96 '57.   (MIRA 10:12)
                        (Cranes, derricks, etc.)

CHUMACHENKO, I.N.; RAKHMATDZHANOV, U.; SUSHENITSA, B.A.; KUZNETSOVA,
        N.Ye.; PONOMAREV, V.G.; FOKEYEV, N.I.; ERGASHEV, R.;
        PROTIKOVSKAYA, S., red.

        [Recent developments in the use of mineral fertilizers)
        Novoe v primenenii mineral'nykh udobrenii. Dushanbe, Izd-
        vo "Irfon," 1964. 61 p.   (MIRA 18:4)

FOKEYEV, P.I., kandidat tekhnicheskikh nauk.

Determining operating expenses of irrigation canals. Gidr. i
mel. 6 no.7:23-25 Jl '54.   (MLRA 7:7)
        (Irrigation canals and flumes)

FOKEYEV, P. M.

"How to Obtain a High Yield of Spring Wheat," Saratov. Obl. izd-vo, 1948

FOKEYEV, P. M.

"Hard Wheat in Saratov Province," Saratov. Obl. izd-vo, 1951

1. FCKEYEV, P,M.

2. USSR (600)

4. Grain

7. Cereal crops under irrigation. Dost, sel'khoz. no.10, 52

9. **Monthly List of Russian Accessions**, Library of Congress, _February_ 1953. Unclassified.

FOREYEV, P.

Wheat - Volga Valley

Cultivation of hard wheat in the Volga Valley.
Kolkh. proizv. 12, no. 3, 1952

9. **Monthly List of Russian Accessions**, Library of Congress, ___June___ 1953,2 Uncl.

1. FOKEYEV, P.M.

2. USSR (600)

4. Irrigation Farming

7. Grain crops under irrigation. Sel. i sem   No. 1   1953.

9. Monthly List of Russian Accessions, Library of Congress, _____April_____ 1953, Uncl.

Fokeev, P.M.

USSR/Cultivated Plants - Grains.   L-2

Abs Jour   : Ref Zhur - Biologiya, No 16, 25 Aug 1957, 69199

Author   : Fokeev, P.M.
Inst   :
Title   : Increasing Production of Hard Wheat.

Orig Pub   : S. kh. Povolzhya, 1956, No 1, 25-32

Abstract   : According to data of experimental stations and the
               Southeast Institute of Agriculture, hard wheats yield
               a similar crop on layered and on soft grounds. The
               data given for comparative yields of hard and soft
               wheats under Southeast arid conditions show that no
               substantial difference exists in yields of soft or
               hard wheats under the same conditions.

Card 1/1

FOKEYEV, P. M. Doc Agr Sci -- (diss) "Agronomic Foundations of the Cultivation of Spring Wheat in the Southeast." Mos, 1957. 31 pp 20 cm. (Mos Order of Lenin Agricultural Academy im K. A. Timiryazev), 110 copies (KL, 25-57, 115)

FOKEYEV, P.M.

Spring cultivation practices for spring wheat in the southeast.
Zemledelie 6 no.2:24-27 '58.   (MIRA 11:3)

1. Nauchno-issledovatel'skiy institut sel'skogo khozyaystva Yugo-
Vostoka.
                    (Volga Valley--Wheat)

FOKSYEV, P.M., doktor sel'skokhozyaystvennykh nauk, prof.

Snow retention as an important factor in increasing crop yields.
in arid regions. Zemledelie 8 no.12:20-25 D '60.   (MIRA 13:11)

1. Nauchno-issledovatel'skiy institut sel'skogo khozyaystva Yugo-
Vostoka.
                    (Snow)   (Field crops)

POLYKOVSKIY, V.S.; ROYZENMAN, F.M.; MAKSAREVA, T.S.; FOKEYEV, V.M.

Methodology of determining pressure by inclusions in quartz.
Trudy MGRI 39:92-100   '63.   (MIRA 16:10)

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

"Corrosion of Elektron Alloy at Low Temperatures. V. M. Fokeev (Vestnik Ingenerov i Tekhnikov (Messenger Eng. and Tech.), 1936, (10), 804-806). — [In Russian.] No corrosion of Elektron (aluminium 7-8, manganese 0-48, zinc 0-73%, magnesium remainder) occurs in tests at the temperature of liquid air in 4 days, but at 0° C. in air considerable corrosion occurred in 6 days; at lower temperature corrosion was reduced, reaching a minimum at −30° C. Between −20° and −40° C. the strength was reduced from 25·7 to 23·5 kg./mm.² and the elongation from 30·5 to about 35%, by atmospheric corrosion in 6 days. —N. A.

METALLURGICAL LITERATURE CLASSIFICATION

The effect of light on the corrosion of the Electron alloy AZM in sea water having the composition of the Black Sea. V. M. Fokeev. *Vestnik Inzhenerov i Tekh.* 1936, No. 3; *Chem. Zentr.* 1936, II, 3723.—Expts. are reported on the corrosion of this alloy (7.15% Al, 0.73% Zn, 0.48% Mn, the rest Mg) in water from the Black Sea (contg. 15.0 g. NaCl, 2 g. MgCl₂, 1.0 g. MgSO₄, 0.5 g. K₂SO₄, 0.1 g. CaCO₃ and 0.7 g. CaSO₄ per l.) in the dark, in diffused daylight and under radiation from an elec. light (Osram-Nitra 1000 v. at 1 m. distance). The corrosion by sea water in the dark, as measured by the evolution of H₂, showed a const. rate for several days, while in daylight or artificial light there was a definite decrease in rate with time.   M. G. Moore

PROCESSES AND PROPERTIES INDEX

The corrosion of Duralumin and aluminum in sea water.
V. M. Fokeev and A. A. Suvalova. *Vestnik Inzhenerov
Tekh.* 1937, 51-4; *Chem. Zentr.* 1937, II, 661-2; cf. *C. A.*
32, 5760².—Of the artificially prepd. water samples repre-
senting several seas, ocean water with the highest salt
content showed the greatest corrosive action on Al and still
more pronounced action on Duralumin. As a result of
the gradual coating of the surface of the metal with the
products of corrosion, the corrosive action was lessened with
time. This was particularly marked when the products of
corrosion adhered tightly. The corrosive action was also
dependent upon the quant. compn. of the salt content,
alkali halides being more corrosive than sulfates. In
general, the protection afforded the metal by the coating
formed was sufficient for practical purposes. M. G. M.

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

FOKEYEV, V., M.,   Pa. 150T17

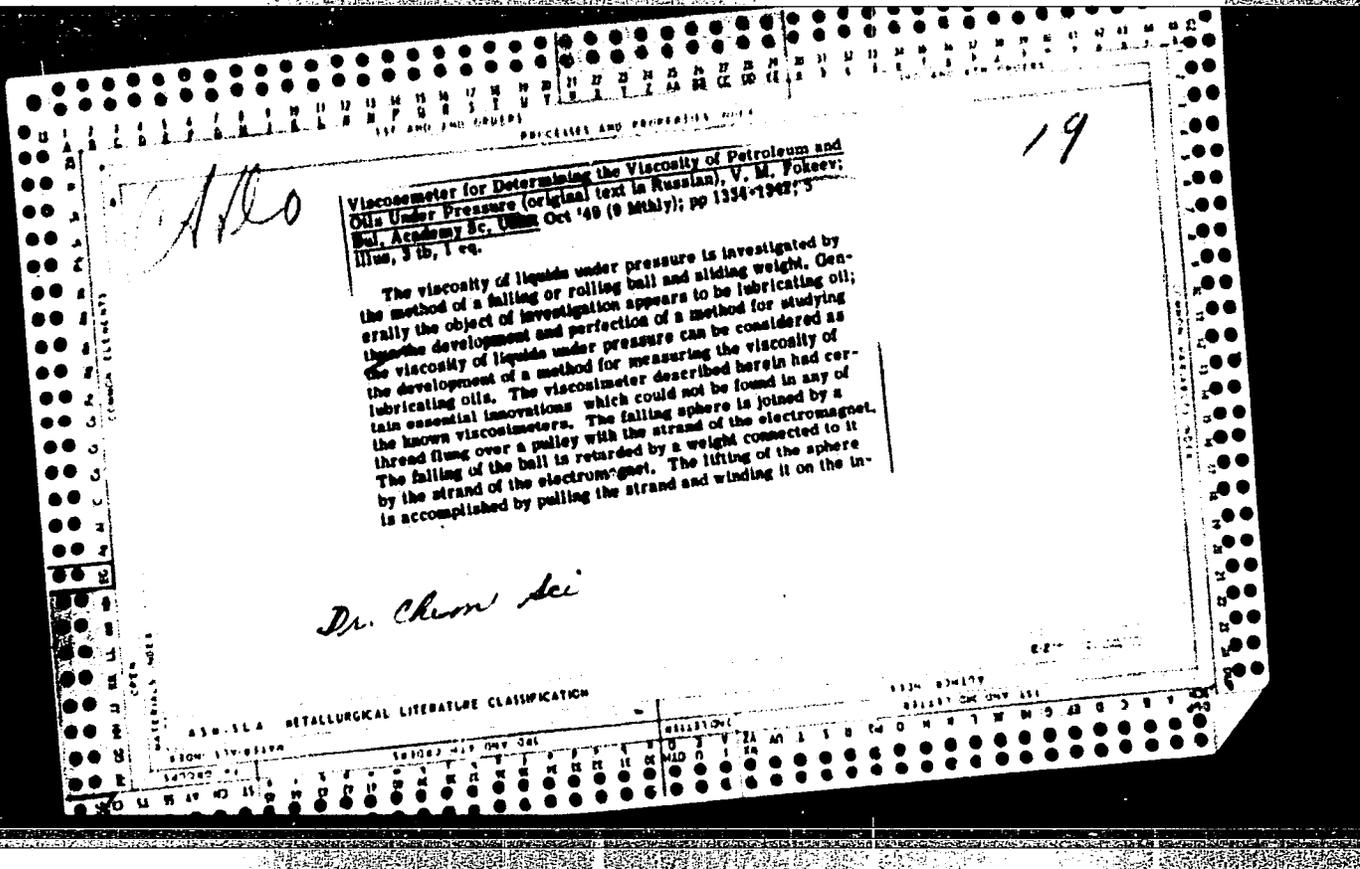USSR/Engineering - Awards   Sep 49
                        Literature

"Award of Prizes by the Presidium of the Academy of Sciences USSR to Scientific Workers of Institutions of the Department of Technical Sciences" ¼ p

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 9

Prizes of 7,500 rubles each were awarded at the 14 Jul 49 meeting to: A. A. Il'yushin, Corr Mem, Acad Sci USSR, Inst of Mech, for work on supersonic flow of gas; Yu. N. Rabotnov, Dr Physicomath Sci, Inst of Mech, for his work, "Slow Flow in Solid Substances"; V. M. Fokeyev, Dr Chem Sci, Inst of Petroleum, for his work, "Viscosity of Stratified Petroleums"; and N. N. ^Aykalin, Dr Tech Sci, Sec for Sci Development of Problems of Elec Welding and Electrothermics, for his work, "Thermal Principles of Welding, Part I,"

Pa. 150T17

19

Viscosimeter for Determining the Viscosity of Petroleum and Oils Under Pressure (original text in Russian), V. M. Fokeev; Bul. Academy Sc. USSR, Oct '49 (9 Mthly); pp 1354-1342; 5 illus, 3 tb, 1 eq.

The viscosity of liquids under pressure is investigated by the method of a falling or rolling ball and sliding weight. Generally the object of investigation appears to be lubricating oil; therefore development and perfection of a method for studying the viscosity of liquids under pressure can be considered as the development of a method for measuring the viscosity of lubricating oils. The viscosimeter described herein had certain essential innovations which could not be found in any of the known viscosimeters. The falling sphere is joined by a thread flung over a pulley with the strand of the electromagnet. The falling of the ball is retarded by a weight connected to it by the strand of the electromagnet. The lifting of the sphere is accomplished by pulling the strand and winding it on the in-

Dr. Chem Sci

METALLURGICAL LITERATURE CLASSIFICATION

side of a reel. The method of the falling sphere can be adapt-
ed for measuring the viscosity of petroleum and oils under
pressure up to 300 atm. The viscosimeter with a vertically
falling sphere (constructed by the author) permits the measure-
ment of viscosity at pressures up to 300 atm in temperature
intervals ranging from 20° to 60°. The dimensions of the con-
structed viscosimeter enable the measurement of viscosities
in intervals from 0.008 to 50 poise with an accuracy sufficient
for practical purposes.